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**Complete package of eddy current
equipment for WELDED JOINTS
testing**

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The equipment can be used for flaw detection of the welded joints of the:

- Constructions made of steel structures
- Bridge structures
- Oil and gas offshore platforms
- Product pipelines of various purposes under paint-and-lacquer or insulation coating, etc

Complete package set of the eddy current equipment for nondestructive testing of the welded joints is designed to detect surface cracks in the weld joint and in the heat affected area, as well as to evaluate the thickness of paint-and-lacquer coating before the testing.

Flaw detector advantages

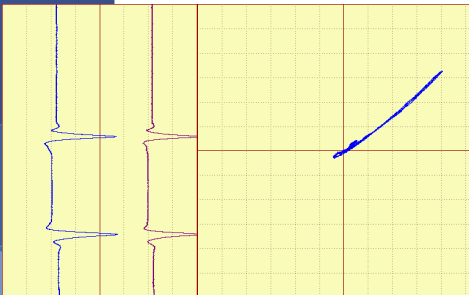
- Comply with the requirements of EN 13860-1 standard
- Allows performing the testing in accordance with the requirements of BS EN 1711, ISO 17643
- Capability of conditional evaluation for the flaw depth
- Possibility of data transfer to/from PC
- Visual and audible defect alarm system
- Storing of a large number of settings and inspection results in the flaw detector memory
- Quick detachable rechargeable storage battery
- Continuous operation time when powered from the battery - up to 10 hours
- Easy-to-use due to intuitive interface
- Low mass-dimensional indicators

Flaw detector distinctive features

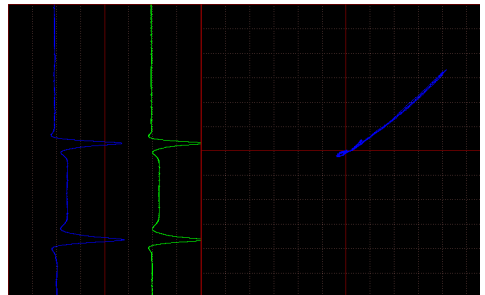
- High-contrast color TFT display
- ADA (automatic defect alarm) system: 4 three-color LEDs, audible alarm system
- capability of thickness evaluation for paint-and-lacquer coatings
- simplified procedure of the instrument calibration on the reference blocks
- possibility of fast measurement of signal/noise ratio
- possibility of operation with ECPs of different manufacturers

TECHNICAL SPECIFICATIONS AND SERVICE FUNCTIONS OF THE INSTRUMENT

- Capability of detecting the flaws with the depth - from 0.002 in (0.05mm) and of the slot - opening - 7.87×10^{-5} in (0.002 mm)
- operating frequencies setting range is from 10 Hz to 16 MHz
- generator output voltage (double amplitude) - from 0.5 V to 6 V
- amplification range - 70 dB
- change of signal phase (signal rotation range from 0° to 360° with 0.1° , 1° , 10° increment)
- measurement frequency - up to 11 kHz
- signal digital filtering (4 types of filters: lowpass, highpass, bandpass, averaging)
- display of eddy-current signal: a) complex plane - allows to determine defects (flaws) against noise interference by analyzing of the pulse wave shape
b) creating mixtures of two channels, can be used to suppress interfering factors and reduce their influence on the testing results (the operator can select one of 4 algorithms for mixing: summing, subtraction, summing with inversion horizon tally and summing with inversion vertically)
- possibility of moving the center of the complex plane to any visible part of the screen
- two operating modes of the instrument: "Day" - used when working in poorly-lit places with insufficient illumination; "Night" - used when working in brightly-lit places to enhance the display readability



a) "Day" mode

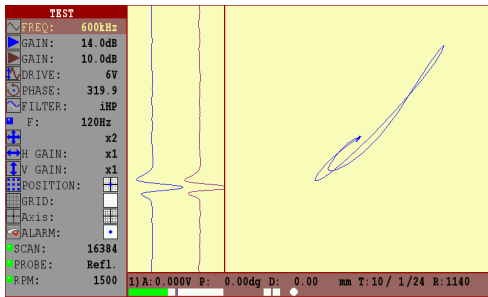


b) "Night" mode

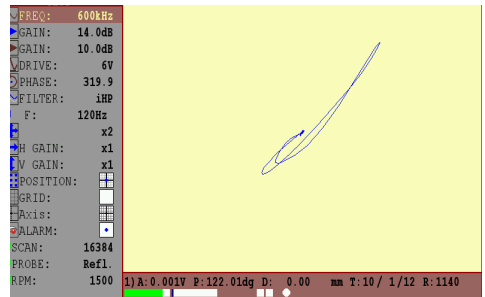


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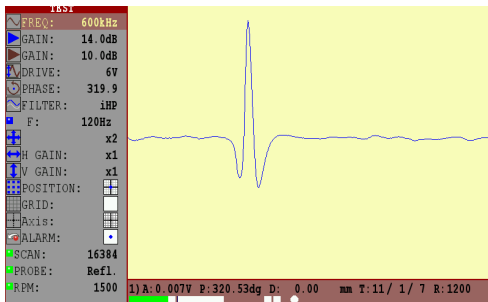
- different types of information display on the flaw detector screen:



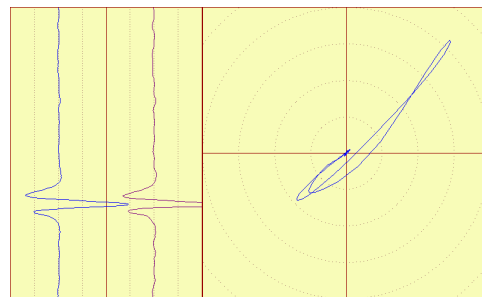
a) Menu+XY+A(t)



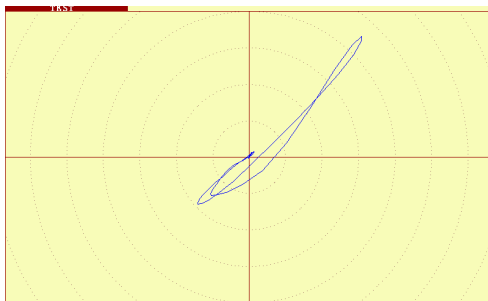
b) Menu+XY



c) Menu+A(t)



d) XY+A(t)



e) XY



f) A(t)



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- time of setting the operating mode of the flaw detector
- persistence (adjustable screen cleaning time in 0.1 sec; 0.5 sec; 1 sec; 2 sec; 3 sec; 4 sec)
- built-in clock and calendar
- screen backlighting and adjustment of screen brightness
- input path overload testing
- battery level control
- capability of connection and operating with the following type of ECPs:
 - Reflection
 - Bridge
 - Single coil
- Capability of connection to eddy current rotary scanner, for holes and specialized scanners testing
- user-friendly multilingual interface
- continuous operation time of the flaw detector with a fully charged battery is not less than 7 hours
- total average service life is 10 years minimum
- the flaw detector is powered from a built-in Li-Ion storage battery with rated voltage of 12 V and rated capacity of 4500 mA·hour
- operating temperatures range - from -4 F to +122 F (-20 to +50°C)
- weight of the flaw detector with the storage battery is not more than 2 lb (0.9 kg)
- overall dimensions of the flaw detector are not larger than 9 x 5.30 x 3.85 in (230 x 135 x 98 mm) .

Eddy current probes for welds inspection

1. To ensure optimal performance as well as observability of testing, ECPs are available in different form factors as well as of various sizes of sensory element.

1.1. Based on the weld joint parameter (its width and height), as well as based on its location and accessibility, the user selects the diameter of the ECP working face and its configuration (Straight or L-shape).



Straight



90° Inline



90° Transverse

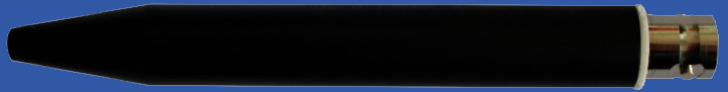
2. A distinctive feature of the ECP for welds testing is a wide bandwidth of the operating frequencies - from 100 kHz to 1 MHz, which in its turn allows testing of both ferromagnetic and stainless steels, as well as aluminum alloys.

2.1. Frequencies for testing of ferromagnetic steels - kHz.

2.2. Frequencies for testing of stainless steels and aluminum alloys - 100 kHz-1 MHz.

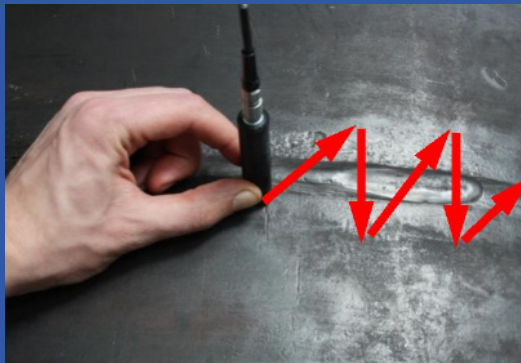
Eddy current probe for the thickness evaluation of the paint-and-lacquer coating (PLC)

If the tested item is covered with paint-and-lacquer coating, then before you start testing for defects, it is necessary to evaluate the thickness of the paint-and-lacquer coating. To do this, the setup of ECP SU100K05D-85S type is performed on the reference block (standard) with gap elements RS 2353/1-3N-Fe. Analyzing the signal value taken on the reference block with different values of the gap thickness and signals from the tested item, the paint-and-lacquer coating thickness is evaluated. After evaluation of the PLC thickness, the ECP for the weld and the weld adjacent zone testing is setup via the equivalent gap.

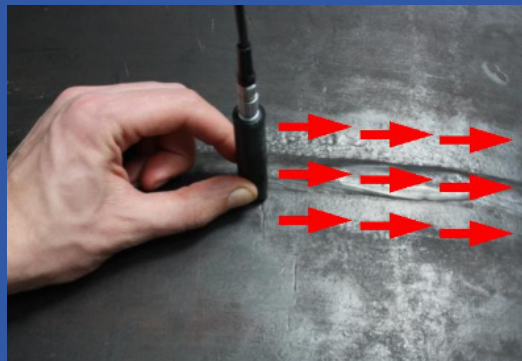


Testing of welded joints in steel structures and constructions

Eddy current (ET) testing through the layer of paint-and-lacquer coating of thickness up 0.08 in (2 mm).

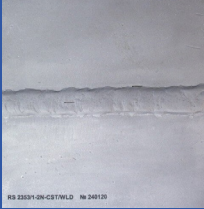


Example of zigzag scanning for welded joint and heat affected area



Example of straight line scanning for welded joint and heat affected area

No	Description
1	<p>Electronic unit of EDDYCON C or EDDYCON CL eddy current flaw detector (Lemo 12-pin connector)</p> 
CONNECTING CABLES	
2	Connecting cable Lemo 12 – Lemo 04 (electronic unit / ECP, Bridge type), 70 in (1800 mm)
3	Connecting cable BNC – Lemo 04 (electronic unit / ECP, Single coil), 70 in (1800 mm)
WELD PROBES	
4	<p>WLD100K3×.2DA0 (Frequency range – 0.1÷1 MHz; diameter 0.2 in(5.1mm); Bridge type)</p> 
5	<p>WLD100K3×.35DA0 (Frequency range – 0.1÷1 MHz; diameter 0.35 in (8.9 mm) Bridge type)</p> 
6	<p>WLD100K3×.63DA0 (Frequency range – 0.1÷0.6 MHz; diameter 0.63 in (16 mm); Bridge type)</p> 
PAINT THICKNESS EVALUATION PROBE	
7	<p>SU100K05D-85S (Frequency range – 35-250 kHz; diameter 0.2 in (5.1mm); Bridge type)</p> 
CALIBRATION BLOCKS	
8	<p>Reference standard RS 2353/1-3N-Fe (Carbon steel; defect depth: 0.02 in (0.5 mm), 0.04 in (1 mm), 0.08 in (2 mm); with shims 4x 0.02 in (4×0.5 mm)</p> 

№	Description
10	<p>Reference standard RS2353/1-2N-Fe/WLD (Carbon steel; defect depth – 0.04 in (1 mm), defect length 0.25 in (6.35 mm))</p> 
Additional equipment	
11	Automatic charger HLD-12620
12	Teflon tape
13	Software for working with PC
14	Carrying bag
15	Transportation case
DOCUMENTATION	
16	Operation manual for EDDYCON C/CL
17	Operation manual for Mascot Type 2542 charger
18	QUICK START GUIDE for EDDYCON C/CL
19	Registration certificate for calibration blocks
20	Registration certificates for eddy current probes



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